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Short Communication

Personality traits and mental health states of methamphetamine-dependent and methamphetamine non-using MSM

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ABSTRACT

This analysis considers the relation between personality traits, mental health states and methamphetamine (MA) use in 60 men who have sex with men (MSM). Thirty MA-dependent and 30 MA non-using MSM were assessed on the *Neo Five Factor Inventory*, the *Brief Symptom Inventory*, the *Perceived Stress Scale*, and the *Posttraumatic Stress Disorder Checklist — Civilian Version* tests. Our results indicate differences between groups on a variety of measures of personality traits and mental states. Specifically, MA-dependent participants were found to be more Neurotic, less Open, less Agreeable, and less Conscientious. Further, MA-dependent participants were found to have higher levels of Paranoid Ideation and higher levels of Interpersonal Sensitivity. Given the high prevalence of MA use in the MSM community and the association between MA use and sexual risk taking, our findings provided a clearer understanding of how individual personality traits may be a factor in the continued use of this drug among MSM. Further research should seek to incorporate individual personality traits into the development of efficacious MA-specific treatment interventions.

1. Introduction

Substance use, although not solely mediated by personality traits, has been shown to be associated with individual differences in personality. Several studies have established a relation between personality traits such as impulsivity, constraint, sensation seeking, social deviance, and the use of certain substances (Allen, Moeller, Rhoades, & Cherek, 1998; Fisher, Elias, & Ritz, 1998; Grekin, Sher, & Wood, 2006; Liraud & Verdoux, 2000; McGue, 1999). Specific traits such as neuroticism and disinhibition have also been associated with substance use in both cross-sectional (Trull & Sher, 1994) and longitudinal investigations (Sher, Bartholow, & Wood, 2000). The link between personality traits and substance use has been demonstrated in a variety of studies which have incorporated an array of both study samples (McGue, 1999; Sher, Bartholow and Wood, 2000; Sher & Trull, 1994; Trull, Waudby, & Sher, 2004), and diverse cultures (Evren, Evren, Yancar, & Erkiran, 2007; Hosák & Hosak, 2004; Moran, Coffey, Mann, Carlin, & Patton, 2006). However, little research has focused on the relation between substance use and personality traits in men who have sex with men (MSM) despite this group's elevated rate of substance use as compared to their heterosexual counterparts (Colfax & Shoptaw, 2005). This is of particular concern as prior research has shown that MSM are more likely to use substances such as GHB, cocaine, and methamphetamine (MA) (Halkitis, 2009). MA use, in particular, has reached epidemic rates and has been associated with high risk sexual behavior in MSM (Halkitis, Parsons, & Stirratt, 2001). MA users have reported a greater number of total, casual, and anonymous sexual partners, as well as higher rates of unprotected intercourse (Semple, Patterson, & Grant, 2002; Shoptaw, Reback, & Freese, 2001; Kalichman, Tannenbaum, & Nachimson, 1998.) The ensuing analyses seek to bridge an important gap in the literature by examining the possible link between personality traits and MA use in MSM. A clearer understanding of the interaction between personality differences and MA use is of paramount importance in a population that is already at increased risk for HIV transmission, and will help to provide further knowledge of how to best serve this often marginalized population.

2. Methods

The sample consisted of 60 gay, bisexual, or other MSM. Potential participants were screened for eligibility via the telephone. Inclusion criteria included 1) identifying as biologically male; 2) the ability to read and communicate in English; 3) reporting sex with another man in the previous year; 4) being 18 years of age or above; and 5) qualifying as either “dependent” or “non-using” of MA based on the *MINI International Neuropsychiatric Interview* (MINI) (Sheehan et al., 1998; Plankey et al., 2007) and not being categorized as “dependent” on any other substance (excluding alcohol) according to the MINI. Individuals who met eligibility criteria and were successfully classified into one of the two study groups (MA-dependent or MA non-user), based on their substance use, were then scheduled for an

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appointment. Of these, 30 were classified as MA-dependent and 30 were classified as MA non-using. Each participant received a comprehensive battery of assessments (for a full description of methods see Halkitis et al., 2009). Assessments undertaken for this analysis included the *NEO Five Factor Inventory* (Costa & McCrae, 1992), the *Brief Symptom Inventory* (BSI) (Derogatis and Coons, 1993), the *Perceived Stress Scale* (PSS) (Cohen, Kamarck, & Mermelstein, 1983) and the *Posttraumatic Stress Disorder Checklist — Civilian Version* (PTSD) Weathers, Litz, Herman, Huska, & Keane, 1993). Participants were given a $100 incentive for their participation. The authors' local Internal Review Board approved all procedures.

3. Results

Sample characteristics are shown in Table 1. The MA-dependent participants had a mean age of 41 years (SD = 7.85) and were equivalent in age to the MA non-using participants who were, on average, 38 years old (SD = 12.54). The two groups were similar in terms of employment status and annual income. However, differences were noted with regard to HIV status ($\chi^2(1) = 3.73$, $p < .05$), educational attainment ($\chi^2(3) = 9.89$, $p = .02$), and race ($\chi^2(3) = 12.39$, $p < .01$). In terms of race, there were equal proportions of Black, Latino, and White participants in the MA-dependent group. However, the MA non-using group was predominantly White. Further, a significant difference was found between race in terms of HIV status ($\chi^2(3) = 8.59$, $p = .03$), with 32% ($n = 10$) of Black participants, 23% ($n = 7$) of Latino participants, and 10% ($n = 3$) of Mixed participants indicating an HIV-positive status, while only 36% ($n = 11$) of White participants indicated they were HIV-positive. In terms of educational attainment, 30.0% ($n = 9$) of the MA non-using participants had attained a graduate degree, while only 3.3% ($n = 1$) of the MA-dependent participants had attained this level of education.

To determine whether MA use was related to personality traits, we ran a MANCOVA with HIV status as a covariate. Of the five major personality traits (Neuroticism, Openness, Agreeableness, Conscientiousness, and Extraversion) found on the *NEO Five Factor Inventory,* significant differences between the MA non-using participants and MA-dependent participants were found across four of the five domains. Specifically, MA-dependent participants were found to be more Neurotic ($F(1, 57) = 5.17$, $p < .05$), less Open ($F(1, 57) = 3.95$, $p = .05$), less Agreeable ($F(1, 57) = 10.89$, $p < .01$) and less Conscientious ($F(1, 57) = 6.89$, $p < .05$). No effect for HIV status was noted. Further we ran a MANCOVA with the subscales of the BSI. On the BSI, MA-dependent participants indicated higher levels of Interpersonal Sensitivity ($F(1, 57) = 5.89$, $p < .05$) and higher levels of Paranoid Ideation($F(1, 57) = 10.09$, $p < .01$). No effect was found for HIV status. For the PTSD and PSS, we ran two separate ANOVAs using a Bonferonni correction set at $p = .025$. No significance was noted. A comparison of mean scores on each of the measures between MA-dependent and MA non-using are shown in Table 2.

We then built a multivariate model using binary logistic regression to test the cumulative effects of the personality traits and mental health states and to differentiate the MA non-using participants from the MA-dependent participants. Only those variables found to be statistically significant based on the previous analyses were included in the regression. We used a one block forced entry to determine the extent to which Neuroticism, Openness, Agreeableness, Conscientiousness, (personality traits) and Paranoid Ideation and Interpersonal Sensitivity (mental health states) differentiated the MA-dependent group from the MA non-using group. The model fit well ($\chi^2(6) = 19.52$, $p = .003$) with a Correct Classification = 80.0% and Nagelkerke $R^2 = 37.0\%$. Micro level fit indices for the individual variables demonstrate that Conscientiousness ($b = -.11$, $p = .04$, OR = .89 (.80, .99)) and Openness ($b = -.12$, $p = .05$, OR = .88 (.78, .99)) differentiate the two groups with the MA non-using group scoring higher than the MA-dependent group on scales of both Openness and Conscientiousness.

4. Discussion

Findings from the present analyses suggest that certain personality traits differ between MA-dependent and MA non-using participants. While prior research has attempted to establish a link between an individual's substance of choice and certain personality traits, results have been largely inconclusive. For example, Conway, Kane, Ball, Poling, and Rounsaville (2003) examined the relation between an individual's choice of substance and personality traits finding no significant relation; however, their results did find differences in monosubstance and polysubstance users. Likewise, recent research conducted by Hopwood, Baker, and Morey (2008) did not yield a significant relation between substance of choice and personality traits. With regard to mental health states, results from the multivariate analysis were not significant, suggesting both MA-dependent and MA non-using participants may have increased psychiatric symptomology, as has been demonstrated in prior studies (Sandfort, de Graaf, Bijl & Schnabel, 2001; Cochran & Mays, 2000).

Research has indicated that MSM use MA at more than ten times the rate of the general population (Colfax & Shoptaw, 2005), and use has been related to a multitude of symptoms including anxiety, impulsivity, depression, and sensation-seeking behavior (Zweben et al., 2004; Semple, Zians, Grant, & Patterson, 2005). Further, MA use

Table 1
Sample characteristics ($N = 60$).

	MA-dependent		Non-user	
	Mean	SD	Mean	SD
	n	%	*n*	%
Age	41.0	7.85	38.4	12.54
Race				
Black	9	15.3	5	8.5
Latino	9	15.3	1	1.7
White	9	15.3	19	32.2
Mixed	2	3.4	5	8.5
HIV status				
Positive	19	31.7	13	21.7
Negative	8	13.3	16	26.7
Don't know	3	5.0	1	1.7

Table 2
Use of methamphetamine (MA) and differences in personality traits.

	MA-dependent		Non-user	
	Mean	SD	Mean	SD
BSI				
Somatization	4.73	4.74	3.00	4.05
Obsessive compulsive	6.60	5.00	5.86	4.81
Interpersonal sensitivity*	4.63	3.33	3.07	2.88
Depression	6.53	4.77	4.60	4.35
Anxiety	6.17	4.81	4.10	4.81
Hostility	4.16	4.21	3.00	3.15
Phobic anxiety	2.36	3.28	1.36	2.87
Paranoid ideations**	6.50	5.43	3.30	2.56
Psychoticism	4.03	4.35	3.36	3.23
NEO 5				
Neo N*	26.80	8.54	22.07	9.57
Neo E	27.70	5.75	28.86	6.06
Neo O*	29.87	5.84	33.13	5.74
Neo A**	25.17	6.59	30.90	7.08
Neo C*	27.57	6.75	32.67	5.86
PTSD total	36.63	14.93	30.40	13.86
PSS total	29.16	4.93	30.83	3.21

* $p \leq .05$.
** $p < .01$.

has also been shown to lead to high risk sexual behavior, including unprotected anal intercourse (Kalichman et al., 1994; Kalichman & Rompa, 1995), decreased condom use (Fernandez et al., 2004), and a greater number of sexual partners (Halkitis, Parsons, & Wilton, 2003). In light of these previous studies, our results provide further insight into the relations between MA use, personality traits, and mental health states in MSM. Also, as previous work has demonstrated (Semple, Zians, Grant, & Patterson, 2005) MA users tend to report having less education, a finding that was also paralleled in this analysis.

We acknowledge our sample size was small and our eligibility criteria highly specific; therefore, our findings have limited generalizability to other populations. Further, relations between personality traits and substance use cannot be assumed, as it is unclear from these findings whether certain personality traits may lead one to use MA (Semple, Zians, Grant & Patterson, 2005), or whether certain personality traits are the result of one's MA use. It is plausible that a bi-directional relation between MA use and personality traits exists in which personality traits serve as both a risk factor for, and a reinforcement of, MA use. Several studies have suggested a reciprocal and bi-directional relation between substance abuse and personality traits, specifically substance use and depression (Fergussen, Lynskey, & Horwood, 1996; Kandel, Johnson, Bird, & Camino, 1997; Wu & Anthony, 1999).

Given the paucity of prior research focusing on the relation between personality traits and substance use in MSM, our findings serve to provide the field with a more nuanced understanding of how underlying personality traits may place one at an increased risk for MA use. This issue is further complicated by the antibiosis that exists between personality traits and the continued use of MA. As MSM continue to use substances that place them at increased risk for HIV transmission, it is imperative to design and implement interventions that address not only the behaviors but also consider the personality traits that may serve as antecedents to MA use. It is our hope that these findings will serve as a springboard for future research that will help develop tailored interventions that treat MA use within the context of individual differences.

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Contributors

All authors have contributed fully to the preparation of this manuscript. The protocol described has been approved by our local IRB.

Conflict of interest

No competing financial interests exist for all authors.

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